We Claim:

1. A method for synthesizing carbon nanostructures comprising:

providing a substrate having a deposition mask;

depositing a metalorganic layer on the substrate, wherein at least a portion of the metalorganic layer is deposited on an unmasked portion of the substrate ;

removing the deposition mask from the substrate;

oxidizing said portion of the metalorganic layer deposited on an unmasked portion of the substrate to form a growth catalyst on the substrate; and

exposing the substrate to a carbon precursor gas at a deposition temperature to form carbon nanostructures.

2. The method of claim 1, wherein the metalorgnic layer is composed of iron phthalocyanine.

3. The method of claim 1, wherein the metalorganic layer is deposited by a physical vapor deposition process.

4. The method of claim 1, wherein the deposited metalorganic layer has a thickness of between about 1 micron and about 30 microns.

5. The method of claim 1, wherein the deposition mask is composed of a metal oxide.

6. The method of claim 1, wherein the deposition mask is composed of a substance selected from the group consisting of silicon oxide and aluminum oxide.

7. The method of claim 1, wherein the unmasked portion of the substrate has a top surface composed of a metal oxide.

8. The method of claim 7, wherein the metal oxide is selected from the group consisting of silicon oxide, aluminum oxide, and magnesium oxide.

9. The method of claim 1, wherein oxidizing said portion of the metalorganic layer deposited on an unmasked portion of the substrate comprises exposing said portion of the metalorganic layer to an oxygenated atmosphere at a temperature of between about 450°C and about 500°C.

10. The method of claim 9, wherein said portion of the metalorganic layer is exposed to the oxygenated atmosphere for between about 2 hours to about 4 hours.

11. The method of claim 1, wherein the growth catalyst comprises metal growth catalyst particles.

12. The method of claim 1, wherein the carbon precursor gas is methane.

13. The method of claim 1, wherein exposing the substrate to a carbon precursor gas comprises exposing the substrate to an atmosphere containing methane, argon, and hydrogen.

14. The method of claim 13, wherein the substrate is exposed to the carbon precursor gas for between about 15 minutes and about 60 minutes.

15. The method of claim 1, wherein the deposition temperature is about 700°C.

16. The method of claim 1, wherein the metalorganic substance is purified prior to deposition of the metalorganic layer.

17. The method of claim 1, wherein the oxidizing said portion of the metalorganic layer is performed prior to removing the deposition mask from the substrate.

18. The method of claim 1, wherein said carbon nanostructures are single wall carbon nanotubes.

19. The method of claim 1, wherein said carbon nanostructures are one dimensional carbon nanostructures.

20. A system for producing carbon nanotubes, the system comprising:

a reactor capable of supporting a plurality of temperature zones and having an air-tight chamber where a source of carbon precursor gas and a source of inert gases is provided;

a sample holder placed within a first temperature zone;

a masked substrate place within a second temperature zone; and

an evacuating system connected to the reactor for evacuating gases from the chamber.

21. The system of claim 20, wherein the first temperature zone is about 150 °C to about 350 °C hotter than the second temperature zone.

22. The system of claim 21, wherein the first temperature zone is about 200 °C to about 300 °C hotter than the second temperature zone.

23. The system of claim 20, wherein the carbon precursor gas is selected from the group consisting of methane, ethane, propane, ethylene, propene, and carbon dioxide.

24. The system of claim 20, wherein the inert gas is selected from the group consisting of hydrogen, helium, argon, neon, krypton and xenon or a mixture thereof.

25. The system of claim 20, wherein the sample holder provides the catalyst.

26. The system of claim 25, wherein the catalyst is an metalorganic wherein the metal is selected from the group consisting of iron and molybdenum or mixtures thereof.

27. The system of claim 26, wherein the catalyst is selected from the group consisting of iron phthalocyanine and molybdenum phthalocyanine or mixtures thereof.

28. A carbon nanotube structure produced by the process of :

depositing a metalorganic layer on a substrate having a deposition mask;

oxidizing the metalorganic layer deposited on an unmasked portion of the substrate; and

exposing the substrate to a carbon precursor gas at a deposition temperature to form carbon nanotube structure.

29. The process of claim 28, wherein depositing is by physical vapor deposition.

30. The process of claim 28, wherein the metalorganic layer is selected from the group consisting of iron phthalocyanine and molybdenum phthalocyanine or mixtures thereof

31. The process of claim 30, wherein the metalorganic layer is iron phthalocyanine.

32. The process of claim 28, wherein the substrate is selected from the group consisting of silicon oxide, aluminum oxide, and magnesium oxide, or mixtures thereof.

33. The process of claim 28, wherein the deposition mask is selected from the group consisting of silicon oxide and aluminum oxide.

34. The process of claim 33, wherein the deposition mask is removed before oxidizing.

35. The process of claim 33, wherein the deposition mask is removed after oxidizing.

36. The process of claim 28, wherein oxidizing comprises exposing to an oxygenating atmosphere.

37. The process of claim 28, wherein the carbon precursor gas is selected from the group consisting of methane, ethane, propane, ethylene, propene, and carbon dioxide.

38. The process of claim 28, wherein the carbon precursor gas is methane.

39. The process of claim 37, further comprising another gas.

40. The process of claim 39, wherein the other gas is selected from the group consisting of hydrogen, helium, argon, neon, krypton and xenon or a mixture thereof.

42. The process of claim 38, further comprising hydrogen and argon.